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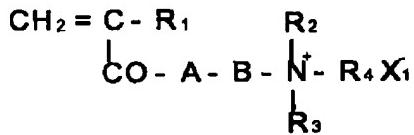
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Application No. 10/517,011
Filed: July 7, 2005
TC Art Unit: 1731
Confirmation No.: 2774

AMENDMENT TO THE CLAIMS

1. (CANCELLED)

2. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 1, wherein the in which a water-soluble polymer having at least one type of ionicity selected from among said cationicity and said amphotericity and occurring in the form of fine particles with a particle size of not greater than 100 μm and a polyalkylenimine in the sulfate salt form coexist, wherein the polymer is produced by dispersion polymerization of a monomer (or monomer mixture) comprising 5 to 100 mole percent of a monomer represented by the general formula (1) and/or (2) given below, 0 to 50 mole percent of a monomer represented by the general formula (3) given below and 0 to 95 mole percent of a water-soluble nonionic monomer with stirring in the presence of said polyalkylenimine and/or modified polyalkylenimine in the sulfate salt form, if necessary further in the presence of a necessary amount of a water-soluble inorganic salt.



General formula (1)

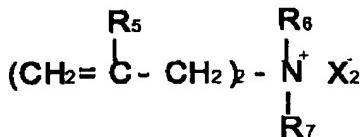
(In the general formula (1), R_1 is a hydrogen atom or a methyl group, R_2 and R_3 may be the same or different and each is an alkyl or an alkoxy group containing 1 to 3 carbon atoms or a benzyl group, R_4 is a hydrogen atom, an alkyl or alkoxy group containing

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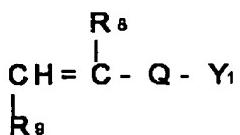
Application No. 10/517,011
 Filed: July 7, 2005
 TC Art Unit: 1731
 Confirmation No.: 2774

1 to 3 carbon atoms or a benzyl group. A represents an oxygen atom or NH, B represents an alkylene or an alkoxylenne group containing 2 to 4 carbon atoms, and X₁ represents an sulfate anion.)



General formula (2)

(In the general formula (2), R₅ represents a hydrogen atom or a methyl group, R₆ and R₇ each represents an alkyl or an alkoxy group containing 1 to 3 carbon atoms or a benzyl group, and X₂ represents an sulfate anion.)



General formula (3)

(In the general formula (3), R₈ represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO₃, C₆H₄SO₃, CONHC(CH₃)₂CH₂SO₃, C₆H₄COO or COO, R₉ represents a hydrogen atom or COOY₂, and Y₁ or Y₂ represents a hydrogen atom or a cation.)

3. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 1, wherein the in which a water-soluble polymer having at least one type of ionicity selected from among said anionicity and said nonionicity and occurring in the form of fine particles with a particle size of not greater than 100 μm and a

Application No. 10/517,011
Filed: July 7, 2005
TC Art Unit: 1731
Confirmation No.: 2774

polyalkylenimine in the sulfate salt form coexist, wherein the polymer is produced by dispersion polymerization of a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by said general formula (3) given above and water-soluble nonionic monomers in the presence of said polyalkylenimine and/or modified polyalkylenimine in the sulfate salt form, if necessary further in the presence of a necessary amount of a water soluble inorganic salt.

4 - 6 . (CANCELLED)

7. (CURRENTLY AMENDED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among cationicity, an amphotericity, a nonionicity and an anionicity and occurring as fine particles with a particle size of not greater than 100 µm and a polyalkylenimine in the sulfate salt form coexist,

according to Claim 1, wherein the polyalkylenimine is polyethylenimine.

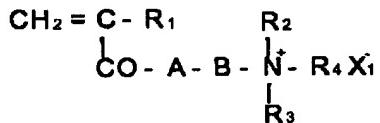
8. (CURRENTLY AMENDED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among cationicity, an amphotericity, a nonionicity and an anionicity and occurring as fine particles with a particle size of not greater than 100 µm and a polyalkylenimine in the sulfate salt form coexist,

wherein the polyalkylenimine and/or modified polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer having at least one type of ionicity selected from among

Application No. 10/517,011
 Filed: July 7, 2005
 TC Art Unit: 1731
 Confirmation No.: 2774

~~said cationicity, said amphotericity, said nonionicity and said anionicity.~~

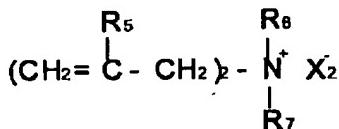
9. (CURRENTLY AMENDED) A method of producing water-soluble polymer dispersions, wherein a dispersion of fine particles of a polymer having at least one type of ionicity selected from among cationicity and amphotericity is produced by subjecting a monomer (or monomer mixture) comprising 5 to 100 mole percent of a monomer represented by the general formula (1) and/or (2) given below, 0 to 50 mole percent of a monomer represented by the general formula (3) given below and 0 to 95 mole percent of a water-soluble nonionic monomer to dispersion polymerization with stirring in the presence of a polyalkylenimine and/or a modified polyalkylenimine in the sulfate salt form, if necessary further in the presence of a necessary amount of a water-soluble inorganic salt.



General formula (1)

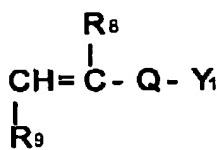
(In the general formula (1), R₁ is a hydrogen atom or a methyl group, R₂ and R₃ may be the same or different and each is an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group, R₄ is a hydrogen atom, an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group. A represents an oxygen atom or NH, B represents an alkylene or alkoxylenne group containing 2 to 4 carbon atoms, and X₁ represents an sulfate anion.)

Application No. 10/517,011
 Filed: July 7, 2005
 TC Art Unit: 1731
 Confirmation No.: 2774



General formula (2)

(In the general formula (2), R_5 represents a hydrogen atom or a methyl group, R_6 and R_7 each represents an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group, and X_2 represents an sulfate anion.)



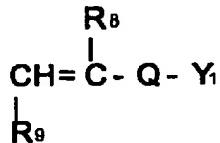
General formula (3)

(In the general formula (3), R_8 represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO_3 , $C_6H_4SO_3$, $CONHC(CH_3)_2CH_2SO_3$, C_6H_4COO or COO , R_9 represents a hydrogen atom or $COOY_2$, and Y_1 or Y_2 represents a hydrogen atom or a cation.)

10. (CURRENTLY AMENDED) A method of producing water-soluble polymer dispersions, wherein a dispersion of fine particles of a polymer having at least one type of ionicity selected from among anionicity and nonionicity is produced by subjecting a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by the general formula (3) given below and water-soluble nonionic monomers to dispersion polymerization with stirring in the presence of a polyalkylenimine

Application No. 10/517,011
 Filed: July 7, 2005
 TC Art Unit: 1731
 Confirmation No.: 2774

~~and/or a modified polyalkylenimine in the sulfate salt form, if necessary further in the presence of a necessary amount of a water-soluble inorganic salt.~~



General formula (3)

(In the general formula (3), R_8 represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO_3 , $C_6H_4SO_3$, $CONHC(CH_3)_2CH_2SO_3$, C_6H_4COO or COO , R_9 represents a hydrogen atom or $COOY_2$, and Y_1 or Y_2 represents a hydrogen atom or a cation.)

11. (CURRENTLY AMENDED) A method of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to 8, 23, 27, 31 and 33 to 35, wherein the water-soluble polymer dispersion is added to paper-stuff making raw material before papermaking for pretreatment thereof.

12. (CURRENTLY AMENDED) A method of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to 8, 23, 27, 31 and 33 to 35, wherein the water-soluble polymer dispersion is added to paper-stuff making raw material before papermaking to thereby improve the freeness thereof.

13. (CURRENTLY AMENDED) A method of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to 8, 23, 27, 31 and 33 to 35, wherein the water-soluble polymer dispersion is added to paper-stuff making raw material before papermaking, in

Application No. 10/517,011
Filed: July 7, 2005
TC Art Unit: 1731
Confirmation No.: 2774

which a sizing agent coexists, to thereby improve the degree of sizing.

14. (CURRENTLY AMENDED) A method use of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to-8, 23, 27, 31 and 33-to-35, wherein the water-soluble polymer dispersion is added to paper-stuff making raw material before papermaking to thereby improve the yield, followed by papermaking.

15. (CURRENTLY AMENDED) A method use of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to-8, 23, 27, 31 and 33-to-35, wherein the water-soluble polymer dispersion is added to paper-stuff making raw material before papermaking in combination with an inorganic and/or organic anionic substance to thereby improve the yield, followed by papermaking.

16. (CURRENTLY AMENDED) A method use of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to-8, 23, 27, 31 and 33-to-35, wherein the water-soluble polymer dispersion is added to organic sludge or paper mill-derived sludge to cause flocculation, followed by dewatering by means of dewatering equipment.

17. (CURRENTLY AMENDED) A method use of using the water-soluble polymer dispersion according to any of Claims 1-2, 3, 7, to-8, 23, 27, 31 and 33-to-35, wherein the water-soluble polymer dispersion is added to organic sludge or paper mill-derived sludge in combination with an amphoteric or anionic water-soluble polymer to

Application No. 10/517,011
Filed: July 7, 2005
TC Art Unit: 1731
Confirmation No.: 2774

cause flocculation, followed by dewatering by means of dewatering equipment.

18-22. (CANCELLED)

23. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion according to Claim 2, wherein the polyalkylenimine is polyethylenimine.

24-26. (CANCELLED)

27. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 2, wherein the polyalkylenimine ~~and/or modified polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer having at least one type of ionicity selected from among said cationicity, and said amphotericity, said nonionicity and said anionicity.~~

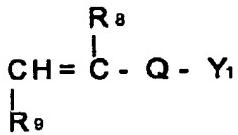
28-30. (CANCELLED)

31. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 7, wherein the polyalkylenimine ~~and/or modified polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer having at least one type of ionicity selected from among said cationicity, said amphotericity, said nonionicity and said anionicity.~~

32-34. (CANCELLED)

Application No. 10/517,011
 Filed: July 7, 2005
 TC Art Unit: 1731
 Confirmation No.: 2774

35. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 31, wherein the water-soluble polymer having at least one type of ionicity selected from among said anionicity and said nonionicity and occurring in the form of fine particles is produced by dispersion polymerization of a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by said general formula (3) given above below and water-soluble nonionic monomers in the presence of said polyalkylenimine and/or modified polyalkylenimine in the sulfate salt form, if necessary further in the presence of a necessary amount of a water soluble inorganic salt.



General formula (3)

(In the general formula (3), R_8 represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO_3 , $C_6H_4SO_3$, $CONHC(CH_3)_2CH_2SO_3$, C_6H_4COO or COO , R_9 represents a hydrogen atom or $COOY_2$, and Y_1 or Y_2 represents a hydrogen atom or a cation.)